

Appl. No.: 10/723,956
Reply to Final Office Action of: November 25, 2005

REMARKS

Claims 1-9 and 12-14 and 19-21 are pending in the application.

Claim Rejections under 35 U.S.C. § 103

Claims 1-9, 12-14, and 19-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Boss, et al., (U.S. 5,024,720) in view of Liebeke (WO 02/080643 A1). The Examiner asserts that Boss, et al., discloses the features of claim 1 except for a teaching of a ring having finely spaced lines less than the pitch of the component-carrying tape and relies upon Liebeke for a teaching of that element.

Claim 1 requires, *inter alia*, a feed sprocket having a number of teeth thereon and an encoder disc having two rings of lines, the first ring having a line spacing corresponding to the pitch of the component-carrying tape, and the second ring having a line spacing less than the pitch of the component-carrying tape and substantially greater than the number of teeth on the feed sprocket. The references cited, either individually or together, do not teach nor suggest such a combination. Each reference provides only one set of markings on an encoder disk which may be sensed. Neither suggest the addition of a second ring of lines or markings. Applicant contends that the Examiner's reliance on Boss's teeth 46 [sic] for a teaching of the first ring of claim 1 is misguided. Boss teaches at column 5, line 35 that the driving wheel 40 is equipped with a peripheral gear rim 46, having a plurality of teeth 48 which protrude into channel portion 22 to engage apertures of the tape. Nowhere does Boss suggest that the optoelectronic sensing means 52 senses or reads the teeth 48. The teeth are merely taught by Boss to engage apertures in the tape. In fact, Boss teaches away from adding a second ring of lines to an encoder disk. See for example column 5, lines 42-55, wherein Boss suggests a single set of markings 50 which

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are optically scanned by the optoelectronic sensing means 52 and then goes on to suggest that a plurality of bars may be provided in place of the markings 50, thus resulting in a single ring of lines.

That which Boss lacks, Liebeke neither teaches nor suggests. While this reference may suggest a fine spacing of lines, nowhere does it suggest two rings of lines. The combination of claim 1 having, inter alia, a feed sprocket with a number of teeth thereon and an encoder disc having two rings of lines, the first ring having a line spacing corresponding to the pitch of the component-carrying tape, and the second ring having a line spacing less than the pitch of the component-carrying tape and substantially greater than the number of teeth on the feed sprocket has significant advantages over the art cited. Specifically, because the encoder disc 40 can use lines 42 as a known start point for each feed stroke, cumulative errors from successive feed strokes can be prevented and because the closely spaced lines 41 can be used to accurately determine the position and angular velocity of the feed sprocket 10, the DC power to the motor 22 can be discontinued at the appropriate time to compensate for hysteresis in the motor 22 and worm gear 20. The art cited with only single sensed rings can not provide these advantages and therefore does not address problems resolved by the claimed invention. Considering this and the fact that the references teach away from the combination of elements in claim 1 as discussed above, reconsideration and withdrawal of the rejection of claim 1 and those that depend therefrom, namely, 2-9, 12-14 and 19-21 under 35 U.S.C. §103(a) is requested.

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Conclusion

In view of the arguments presented herein, the application is considered to be in condition for allowance. Reconsideration and passage to issue is respectfully requested.

Please charge any additional fees and/or credit any overpayments associated with this application to Deposit Order Account No. 501581.

Respectfully submitted,



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